CREDIT CRUNCH OR NOT? CASE OF TURKEY DURING THE GLOBAL ECONOMIC CRISIS

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Credit Crunch or not? Case of Turkey during the Global Economic Crisis[*]

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Abstract

This paper analyzes the stock returns of non-financial firms in Turkey during the recent global financial crisis. Our hypothesis is that if a credit crunch was experienced in Turkey, firms that were more dependent on external finance for investment and working capital must have been affected more severely. Using firm-level data, we find that stock returns of firms with high pre-crisis dependence on external finance for working capital and balance sheet problems declined more during the crisis. On the other hand, we find no evidence of a demand side effect: Being an exporter does not matter for predicting ex-post stock returns. We also perform the same analysis for non-crisis time periods as a placebo test. We find that stock returns were not affected by financial dependency in non-crisis periods. Our results suggest that financial dependency was a more important concern than global demand conditions at the onset of the crisis in Turkey.

Keywords: Financial Crisis; Credit Crunch; Turkey

JEL: G10, G30

1   Introduction

The financial crisis that started in the US in 2008 spread around the globe affecting both developed and developing countries. Turkey was no exception. Turkish economy slid into recession in the third quarter of 2008 and contracted for four consecutive quarters. Turkey's GDP increased by only 0.8% in 2008 and fell by 4.7% in 2009. So, how did the financial crisis in the US turned into a recession in Turkey? There are two potential answers to this question. One is that the crisis hit the Turkish economy through the demand channel; a drop in foreign demand for domestic goods and services caused the recession. The other one is that the crisis hit the economy through the finance channel; a shortage of capital from abroad reduced Turkish firms' access to credit for working capital and investment, which in turn decreased supply. Of course, it is possible that throughout the recession both of these channels were effective but the question still remains on which one preceded the other.

We try to tackle this question by studying the causes of the drop in stock returns of firms traded in the Istanbul Stock Exchange (ISE). Our hypothesis is that if there was a credit shortage, than it must be the case that the stock returns of the firms who are more reliant on external finance for operations and investments would drop more than others. If, on the other hand, the economy was hit by a drop in foreign demand or was expected to, than we would expect a drop in the stock returns of the firms that export a significant fraction of their output. Mainly, we rely on the thought experiment of Tong and Wei (2011). They show that external financial dependency measures help forecast the ex-post stock returns of non-financial firms during the crisis, even after controlling for the Fama-French three factors, which shows that concerns for tight credit conditions actually mattered in the recent crisis. In this paper, we use financial dependency measures as well as the ratio of exports to sales, to see whether being an exporter also helps forecast the ex-post stock returns of non-financial firms in Turkey.

Since Turkey is an emerging market for which exports are vital for its economy, the demand channel is expected to be important in transmission of both financial and economic shocks from overseas. Recent research (Amiti and Weinstein (2011)) show that bank health is an important factor in determining firm-level exports and exporters are expected to be more strongly affected during financial crises. Balakrishnan et al. (2011) and Elekdağ and İbrahim Burak Kanlı (2010) show that in the recent crisis in 2008, financial stress was exceptionally high in emerging markets, including Turkey, although reforms after the 2001 crisis improved bank health in Turkey, significantly. Therefore, one could expect that stock returns of firms

who sell a large fraction of their output to foreign markets would be more strongly affected in the crisis.

In our analysis, we make use of financial characteristics that relate to a firm's short-term and long-term dependency on external finance. Our measure of dependency on external finance for long term investment is similar to Rajan and Zingales (1998) and our measures of dependency on external finance for short term investment are similar to those of Raddatz (2006). Our control variables include the Fama and French (1992) factors beta, firm size and market-to-book ratio as well as a measure of momentum which is used by Lakonishok et al. (1994). We also include pre-crisis leverage ratio and fraction of exports in sales in the regressions. We find that among our financial dependency variables, only the pre-crisis debt-to-sale ratio is strongly significant, implying that short term need for external finance and balance sheet problems made non-financial firms more vulnerable during the crisis. On the other hand, we find that being an exporter did not matter for predicting ex-post stock returns during the crisis.

There is a large body of literature that studies the determinants of stock returns starting with the CAPM (Sharpe (1964)) and Fama and French (1992) three factor model. There is a number of studies in the literature that tries to identify the existence of credit crunch during the recent financial crisis. Tong and Wei (2011) tries to identify whether pre-crisis exposure to non-FDI capital flows worsen the credit crunch in emerging markets in 2008. Calomiris et al. (2012) study the effects of crisis shocks on firm returns using international panel data. Chari et al. (2008) and Bates et al. (2009) argue that there was no shortage of credit loans to firms in the United States during the crisis while Brunnermeier (2009) discuss otherwise. We contribute to this literature by studying an emerging market economy, Turkey, specifically. Other works that test asset pricing models using stock exchange data from Turkey include Yalçın and Erşahin (2011).

The remainder of this paper is as follows. Section 2 describes the main specification and explains the financial dependency measures and control variables in detail. Section 3 describes the data. Section 4 presents main empirical results as well as several other specifications and placebo tests. Section 5 concludes.

2   Main specification

In this paper, we try to see whether changes in stock returns of non-financial firms in Turkey during the stock market crash in 2008 recession were affected by how deeply dependent these firms were to external financing. If need for external financing was important then a shortage of capital, or at least the fear of it, could well have played a role in the decline in economic activities of these firms and the Turkish economy in general although Turkey was not directly hit by the financial crisis that started in the United States. In addition, we look for evidence on the effect of the decrease in global demand on firm returns. We try to see whether openness to global trade was an important factor in explaining the decrease in firm returns. The decrease in global demand could be an alternative explanation of how the financial crisis abroad turned into a recession in Turkey.

Figure 1 shows the change in ISE 100 (Istanbul Stock Exchange) between 2007 and 2009. The index declined about 56% from January 2008 to March 2009. As the figure shows the decrease started three quarters before the collapse of the Lehman Brothers (September 2008) and lasted for two more quarters. The crisis period can be considered as two different periods, pre-Lehman and post-Lehman. In our analysis, we consider the whole period first and later on we run the same experiments with pre and post-Lehman returns. Our basic specification is as follows:

$$StockReturn = \alpha_0 + \alpha_1 * FinancialDependence + \alpha_2 * ControlVariables + \varepsilon \qquad (1)$$

All financial dependency variables are pre-crisis averages. This allows us to isolate from the demand side effects on financial dependency measures during the crisis. The control variables are mostly driven from standard asset pricing models. We describe both sets of variables in detail in the next sections.

2.1   Financial dependency measures

We use two sets of financial dependency measures in our analysis, one for long-term liquidity needs and one for short-term liquidity needs. The first set includes only one measure, the dependence on external finance for investment. The second set involves several measures such as cash conversion cycle, investment to sales ratio and short-term liabilities to sales ratio. We use these measures to capture firms need for working capital in the short-run.

Most of these measures have been used in the finance literature for different purposes before. In this section, we describe each one in detail.

2.1.1 Dependence on external finance for investment

Our measure for dependence on external finance for investment (ExtInv) is based on Rajan and Zingales (1998). Rajan and Zingales (1998) use this measure as a proxy for technological characteristics at the sectoral level. We use it as a proxy for need for long-term liquidity at the individual firm level. We define firms' dependence on external finance for investment, as the difference between net cash flow from operations and net capital expenditures, divided by the absolute value of net capital expenditures.[1,2]

$$ExtInv = \frac{\text{net cash flow from operations} - \text{net capital expenditures}}{|\text{net capital expenditures}|} \tag{2}$$

ExtInv accounts for the fraction of net capital expenditures that is covered by net cash flow from operations. On an annual basis, long term investment expenditures can easily exceed cash flow from operations in a given year. Therefore, we sum both the net cash flows and net capital expenditures over three years before the crisis, from 2005 to 2007, to find the ExtInv ratio. Our hypothesis is that firms that cover a small fraction of their capital expenditures with cash from operations should be more dependent on external finance for investment and hence more vulnerable in the face of a financial crisis. We expect these firms' returns to decrease more in the stock market during the crisis.

2.1.2 Dependence on external finance for working capital

Working capital is needed for firms to continue their operations and pay their short-term liabilities because there is a lag between the time firms pay for their inputs and the time they sell their outputs. Dependence on external finance for working capital cannot be observed directly so a proxy should be used for this metric. We use three proxies for dependence on external finance for working capital similar to ones used in Raddatz (2006). However, we

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[1]It is multiplied by minus one so that positive numbers mean that firms' net cash flow from investment activities is negative.

[2]To have a meaningful variable, we use the absolute value of net capital expenditures in the denominator because over three years, some firms in our data set sell their investment goods therefore their net capital expenditures turn positive. Without taking the absolute value of the denominator, ExtInv measure for firms with high positive net cash flow from investment become positive as if they are in great demand for liquidity.

calculate these measures at the firm level rather than at the sectoral level.

Our first measure is the cash conversion cycle (CCC) which captures the number of days between purchases of a firm's inputs and its receipt of receivables from the sale of output. A higher value for the CCC indicates a greater need for working capital to operate because it takes more time to obtain the return on firm's inventory investment. CCC is given by

$$365 \times \left(\frac{\text{inventories} - \text{account payables}}{\text{cost of goods sold}} + \frac{\text{account receivables}}{\text{total sales}} \right) \qquad (3)$$

Our second measure is the ratio of inventory-to-sales (InvSale) which measures the fraction of inventory value that is covered by sales revenue. A higher inventory-to-sales ratio signals a larger external dependence for working capital.[3] Finally, our third measure is the short-term liabilities to sales ratio (DebtSale) which is the fraction of short-term debt that can be paid by sales revenue. A higher DebtSale ratio indicates a higher need for external finance to cover short-term debt. Our hypotheses is that in an environment of tight financial conditions, firms that are more in need of external finance for working capital, should be more adversely affected in the stock market. Once again, we use the pre-crisis averages of these measures for each firm in our analysis, that is, the average over years 2005, 2006 and 2007. Only the debt-to-sales measure is constructed by using 2007 data, the most recent year before the crisis.

2.2 Control variables

To control for other factors that affect stock returns such as risk and demand contraction, we add control variables. The first control variable is the ratio of exports to firms' total sales (Exports). If there is a decline in foreign demand or if the market is expecting such a decline, firms with a high export ratio should experience a larger decline in their stock returns. For the export ratio, we use the pre-crisis average over years 2005, 2006 and 2007 so that we can account for the openness of the firm to global demand before the crash in the stock market.

Next, we include the Fama and French (1992) three factors: beta, firm size (log of market size) and market-to-book value (Market/Book). We use 2007 data to estimate the Fama-French three factors. During a crisis, returns of firms with a higher beta should decline more. Tong and Wei (2011) find that firms with small firm size and high market-to-book

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[3]For more discussion on this measure see Raddatz (2006).

ratio experience a greater decline in their stock prices.

Another control variable we use is the momentum factor from Lakonishok et al. (1994). Momentum factor is the change in the stock return of each firm from the end of January 2007 to the end of December 2007. Lastly, we add leverage, also a widely used measure in the literature.[4] For example, Molina (2005) finds that higher leverage ratios for firms lead to larger risk of default and lower credit rating. During a phase of credit tightening, firms with higher leverage may find it difficult to refinance their debt or acquire new credits.

3   The Data

The data we use is from the Istanbul Stock Exchange (ISE) which includes balance sheets and stock valuations of firms. There are over 300 companies that are publicly traded in the ISE. From the data, we remove all financial firms, conglomerates and sporting clubs which might have different dynamics than non-financial firms. Then, we remove all firms for which there is missing data over years 2005–2007. After this cleaning process, we end up with 194 non-financial firms. The stock returns we use are adjusted for capital actions and dividends.

3.1   Summary statistics

Table 1 shows the summary statistics for the dependent variable and the independent variables. The stock returns of the firms in our dataset declined by 45 percent on average from the beginning of January 2008 to March 2009. The median for ExtInv is 0.01 and it shows that more than 50 percent of firms needed external finance for their investment expenditures. The median values for InvSale and DebtSale are 0.14 and 0.27, respectively, which implies that most firms are able to cover their inventory and debt payments with their ongoing revenue. Moreover, mean and median values for leverage are 0.99 and 0.67, respectively, implying that non-financial firms that are traded in the ISE are not highly leveraged.

Table 2 shows pair-wise correlations of variables. Returns of firms are uncorrelated with ExtInv and have slightly negative correlations with CCC, InvSale and DebtSale. Correlation between variables that measure dependence on external finance for working capital is positive as expected. The strongest correlation is between InvSale and CCC which implies that these

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[4]Total liabilities divided by stockholders' equity.

two measures seem to capture similar aspects for short-term capital needs.

4   Results

We run four different set of regressions. In the first set, we consider the whole time period from the beginning of January 2008 to March 2009. In the second set, we analyze the periods before and after the collapse of Lehman Brothers, separately. In the third set, we explore the possibility that exporting firms might be more financially dependent than other non-financial firms. In the final set of regressions, we test whether the external finance dependence variables also matter in a placebo environment, i.e. in a time period when there are no financial crisis or recessions.

4.1   Main results

The stock returns between January 2008 and March 2009 are examined for 194 non-financial firms that are traded publicly in ISE. In the first four columns in Table 3, each of the financial dependency measures are included in the regressions as the sole regressors. The first two columns show that the coefficient for ExtInv and CCC are statistically insignificant. InvSale which is highly correlated with CCC also has a statistically insignificant coefficient but has the right sign. On the other hand, coefficient of DebtSale is negative as expected and strongly significant. CCC and InvSale are only proxies for external financial dependence for working capital, but DebtSale variable can also interpreted as a proxy for balance sheet problems in a firm. We interpret these findings as a sign that balance sheet problems were a more important risk factor than need for finance for working capital. If DebtSale ratio is high, firms may have difficulty in paying back their debt and their non-performing loans can increase as a result. Therefore, banks may be more reluctant to lend to firms who have high liability-to-sales ratio, especially during a crisis. When all financial dependency variables are entered into regression, all variables keep their former sign and their significance levels.

In the sixth column exports ratio is added as a control variable, its coefficient is negative but insignificant. The next column shows the results after Fama-French control variables and the momentum factor is added. The coefficient of beta is negative and statistically significant. Firms whose returns are highly correlated correlated with the index suffer more in the crisis, as expected. Coefficient of firm size and book-to-market value are statistically

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insignificant. Coefficient of momentum factor is also negative and statistically significant at 1 percent level. Firms that had steeper inclines in returns before the crisis are more adversely affected during the downturn of the market. In the last column, the pre-crisis leverage ratio is added in the regression. Its coefficient is negative but insignificant. Negative sign can indicate that highly leveraged firms can find it difficult to refinance their debt. Therefore, their returns can be adversely affected.

It is important to note that the exports ratio is insignificant in all regressions from column 6 to 8. This implies that the decrease in global demand or the concerns for it played no role in the decrease in ex-post stock returns of exporting firms. Given the fact that Turkey is an emerging market for which export markets are extremely important in terms of economic growth, this result is surprising. Although Calomiris et al. (2012) find that emerging markets are more sensitive to global trade conditions, we find no such evidence for Turkey. We see this as evidence that it was more the concerns for balance sheet problems and lack of liquidity that mattered for the market rather than demand side concerns.

4.2   Pre-Lehman and post-Lehman analysis

There is anecdotal evidence that the behavior of market is different before and after the bankruptcy of Lehman Brothers so we divide the period that is used in main regression into two parts. First we analyze the pre-Lehman returns (returns from the beginning of January 2008 to the end of August 2008). In pre-Lehman regressions, signs and significance of coefficients for ExtInv and CCC are same as whole period as it can be seen in Columns 1 and 2 of Table 4. In Columns 3 and 4 of Table 4, InvSale and DebtSale are negative and significant at 1 percent level. Significance of two financial dependency variables can indicate an environment of credit rationing. When all financial dependency variables are added into regression in Column 5, InvSale becomes insignificant and positive again whereas magnitude of DebtSale increases and remains significant. Coefficient of Exports is negative and insignificant as in the regression for the whole period. Beta is negative and insignificant. Insignificance of Beta can suggest that there was not a strong downward trend in the market before the pre-Lehman period. Coefficients of Firm size, Market/Book and Momentum have reverse signs compared to the regression for the whole period. Positive sign of Momentum can lead us to same conclusion as Beta. Leverage is also still insignificant and negative. Column 8 of Table 3 suggest that in the pre-Lehman period, the downward trend was not random and firms' dependence on external finance for working capital and debt significantly

affected stock returns.

Table 5 shows the regression results for the post-Lehman period. The dependent variable is the post-Lehman returns (returns from the end of August 2008 to the end of March 2008). In these regressions, all of our financial dependency variables are insignificant. Moreover signs of ExtInv, CCC and InvSale are positive. Only DebtSale keeps its negative sign. Both the Beta and Momentum are negative and statistically significant at 1 percent level. These results can be interpreted as an indication that the market entered into a frenzy sell after the bankruptcy of Lehman Brothers and firms that have higher returns and are more correlated with the market declined the most making external financial dependency less important. The exports ratio remains insignificant in all regressions in the post-Lehman period as well.

4.3   Financial dependency for exporters

Results from the main regression for the whole period suggest that the debt-to-sale ratio is important in explaining the decline in returns while export ratio is not. In this section, we explore the case where the level of debt-to-sale ratio might be dependent on being an exporter. In other words, is it the case that being an exporter causes firms to have higher debt-to-sale ratios? This might cause the coefficient of export ratio to become insignificant while debt-to-sale ratio is significant. In order to account for such cases, we include an interaction term in the regression.

Table 6 shows the results when an interaction dummy is included for the export ratio and debt-to-sale ratio. In the first column, the coefficient of debt-to-sale is still strongly significant. The coefficient of the interaction term (shown as DebtSale*Exports) is positive and statistically significant at 10 percent level, indicating that for larger exporters, the negative effect of DebtSale on returns decreases. This implies exactly the opposite of our concerns, in fact it shows that exporter firms are less vulnerable to balance sheet problems. Moreover, when control variables are entered into the regression, the interaction term becomes insignificant while debt-to-sale ratio is still significant.

4.4   Placebo test

In order to make sure that the financial dependency measures are meaningful during crisis periods we carry out a placebo test. Mainly, we pick a time period during which there was

no crisis in the economy and run similar regressions to see whether any of our dependency measures mattered during this period as well. We use stock returns in year 2007 as the dependent variable as the Turkish economy expanded this year experiencing positive capital inflows. Therefore, we expect all financial dependency variables to be insignificant in this time period. Table 7 shows the results. As expected, all coefficients of financial dependence variables are insignificant. Moreover, ExtInv, InvSale and DebtSale have positive signs. Only coefficient of CCC is negative.

5   Conclusion

In this paper, we test the existence of a credit crunch in non-financial firms in Turkey during the crisis. We try to see whether high dependency on external finance for investment and/or working capital can help forecast ex-post stock returns of non-financial firms during the crisis. We expect these measures to adversely affect stock returns in the existence of a credit crunch. We use four proxies to measure dependency on external finance. The proxy for dependence on External Finance for Investment evaluates firms' external finance dependency for long-term liquidity needs and the Cash Convergence Cycle, Inventory-to-Sales ratio and Debt-to-Sales ratio measure dependency on external finance for short-term liquidity needs. In order to see whether global demand contraction or the expectations for it might have been important in explaining stock returns we add pre-crisis ratio of exports in total sales. We also include various control variables to control for factors that potentially help forecast stock returns such as the Fama-French three factors, momentum factor and pre-crisis leverage.

We find that Debt-to-Sales ratio is strongly significant and negatively affects stock returns. This is true both for the whole and the pre-Lehman periods. External Finance for Investment and the Cash Conversion Cycle measures are not significant. Inventory-to-Sales ratio is only significant for the pre-Lehman period when Debt-to-Sale ratio is excluded. Our interpretation for these results is that stock returns for firms with a high pre-crisis short-term liability to total sales ratio were adversely affected during the crisis. The markets were weary of firms with balance sheet problems but financial dependence for long term investments did not matter. In the period after the collapse of Lehman Brothers, none of our financial dependency measures are significant. Only the beta coefficient and the momentum factor is useful in forecasting stock returns in the post-Lehman period suggesting that only market dynamics mattered at that point.

We do not find any evidence for the demand channel to be effective in the decline in stock returns. Although exports are vital for the Turkish economy, we find no evidence that the decrease in global demand or the fear of it played an important role in the stock market performance of exporters during the crisis. Our results suggest that the concern for financing debt obligations was the important factor rather than the demand channel.

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Table 1: Summary statistics

Variable	Obs	Mean	S.D.	Min	Quantiles			Max
					0.25	Mdn	0.75	
Returns	194	-0.45	0.29	-0.87	-0.62	-0.49	-0.35	1.22
ExtInv	194	-6.47	63.15	-869.03	-1.8	0.01	0.69	50.55
CCC	194	91.77	93.78	-154.39	35.04	78.55	135.96	819.69
InvSale	194	0.18	0.17	0	0.09	0.14	0.22	1.42
DebtSale	194	0.51	0.84	0	0.15	0.27	0.46	5.92
Exports	194	22.82	24.24	0	1.3	15.33	38.67	100
Beta	194	0.57	0.28	-0.35	0.43	0.6	0.74	1.14
Firm Size	194	11.94	1.6	9.05	10.68	11.83	12.98	17.15
Market/Book	194	1.88	2.14	-6.8	0.97	1.44	2.41	15.88
Momentum	194	0.11	0.58	-0.57	-0.12	0.01	0.16	5.37
Leverage	194	0.99	2.19	-11.19	0.37	0.67	1.55	18.79

Table 2: Correlation of variables

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Returns	1										
(2) ExtInv	0.004	1									
(3) CCC	-0.057	0.019	1								
(4) InvSale	-0.091	0.09	0.789	1							
(5) DebtSale	-0.163	0.009	0.128	0.392	1						
(6) Exports	-0.085	0.044	0.058	0.155	-0.078	1					
(7) Beta	-0.133	0.013	0	-0.002	-0.17	-0.037	1				
(8) Firm Size	-0.023	0.017	-0.171	-0.286	-0.301	-0.093	0.224	1			
(9) Market/Book	0.019	0.034	-0.094	-0.116	-0.023	-0.162	-0.115	0.336	1		
(10) Momentum	-0.166	-0.004	0.029	0.14	0.321	-0.029	-0.126	-0.002	0.16	1	
(11) Leverage	-0.038	0.033	0.024	0.007	0.074	-0.013	-0.191	0.032	0.442	0.033	1

Table 3: The effect of liquidity crunch between January 2008 and March 2009

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ExtInv	2.01E-05				3.01E-05	3.49E-05	3.59E-05	4.30E-05
	(0.000)				(0.000)	(0.000)	(0.000)	(0.000)
CCC		-1.75E-04			-1.10E-04	-1.97E-04	-2.91E-04	-2.67E-04
		(0.000)			(0.000)	(0.000)	(0.000)	(0.000)
InvSale			-0.154		-0.002	0.079	0.142	0.133
			(0.100)		(0.231)	(0.251)	(0.248)	(0.252)
DebtSale				-0.057***	-0.055***	-0.063***	-0.067***	-0.065**
				(0.013)	(0.020)	(0.021)	(0.025)	(0.025)
Exports						-0.001	-0.001	-0.001
						(0.001)	(0.001)	(0.001)
Beta							-0.182**	-0.191***
							(0.070)	(0.069)
Firm Size							-0.009	-0.010
							(0.011)	(0.011)
Market/Book							0.002	0.007
							(0.011)	(0.011)
Momentum							-0.070***	-0.073***
							(0.023)	(0.024)
Leverage								-0.010
								(0.009)
Constant	-0.445***	-0.429***	-0.417***	-0.416***	-0.407***	-0.381***	-0.157	-0.142
	(0.021)	(0.035)	(0.030)	(0.024)	(0.034)	(0.045)	(0.163)	(0.160)
Observations	194	194	194	194	194	194	194	194
R-squared	0.000	0.003	0.008	0.027	0.028	0.038	0.088	0.092
Adjusted R-squared	-0.005	-0.002	0.003	0.022	0.007	0.012	0.043	0.042

Note: Dependent variable is stock returns adjusted for capital actions and dividends between the beginning of January 2008 and the end of March 2009. Heteroscedasticity-consistent standard errors are in parentheses; $*p<0.1$, $**p<0.05$, $***p<0.01$.

Table 4: The effect of liquidity crunch between January 2008 and August 2008

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ExtInv	1.78E-05				-1.53E-05	-8.75E-06	-8.43E-06	-6.13E-06
	(0.000)				(0.000)	(0.000)	(0.000)	(0.000)
CCC		-6.04E-04			-9.15E-04	-1.04E-03	-1.04E-03	-1.03E-03
		(0.000)			(0.001)	(0.001)	(0.001)	(0.001)
InvSale			-0.280***		0.288	0.399	0.420	0.417
			(0.080)		(0.413)	(0.484)	(0.472)	(0.480)
DebtSale				-0.078***	-0.088***	-0.099***	-0.108***	-0.107**
				(0.017)	(0.031)	(0.037)	(0.041)	(0.042)
Exports						-0.002	-0.002	-0.002
						(0.001)	(0.001)	(0.002)
Beta							-0.048	-0.051
							(0.067)	(0.069)
Firm Size							0.014	0.014
							(0.012)	(0.012)
Market/Book							-0.005	-0.003
							(0.013)	(0.016)
Momentum							0.056	0.055
							(0.033)	(0.035)
Leverage								-0.003
								(0.012)
Constant	-0.205***	-0.150*	-0.155***	-0.166***	-0.129*	-0.0938	-0.230	-0.225
	(0.029)	(0.060)	(0.038)	(0.033)	(0.052)	(0.076)	(0.173)	(0.169)
Observations	194	194	194	194	194	194	194	194
R-squared	0.000	0.020	0.014	0.026	0.045	0.055	0.064	0.064
Adjusted R-squared	-0.005	0.015	0.009	0.021	0.025	0.030	0.018	0.013

Note: Dependent variable is stock returns adjusted for capital actions and dividends between the beginning of January 2008 and the end of August 2009. Heteroscedasticity consistent standard errors are in parentheses; *p<0.1, **p<0.05, ***p<0.01.

Table 5: The effect of liquidity crunch between September 2008 and March 2009

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ExtInv	2.61E-05						3.70E-05	4.04E-05
	(0.000)						(0.000)	(0.000)
CCC		2.72E-04			3.14E-04	2.51E-05 2.86E-04	1.85E-04	1.96E-04
		(0.000)			(0.000)	(0.000)	(0.000)	(0.000)
InvSale			0.098		-0.022	0.003	0.045	0.041
			(0.112)		(0.220)	(0.214)	(0.200)	(0.202)
DebtSale				-0.006	-0.009	-0.012	-0.014	-0.013
				(0.017)	(0.022)	(0.022)	(0.026)	(0.026)
Exports						0.000	-0.001	-0.001
						(0.001)	(0.001)	(0.001)
Beta							-0.174***	-0.178***
							(0.062)	(0.062)
Firm Size							-0.026*	-0.026**
							(0.013)	(0.013)
Market/Book							0.003	0.005
							(0.008)	(0.008)
Momentum							-0.109***	-0.111***
							(0.017)	(0.017)
Leverage								-0.005
								(0.005)
Constant	-0.289***	-0.314***	-0.307***	-0.286***	-0.309***	-0.301***	0.120	0.127
	(0.019)	(0.021)	(0.022)	(0.021)	(0.022)	(0.027)	(0.155)	(0.154)
Observations	194	194	194	194	194	194	194	194
R-squared	0.000	0.010	0.004	0.000	0.011	0.012	0.131	0.133
Adjusted R-squared	-0.005	0.005	-0.001	-0.005	-0.010	-0.014	0.089	0.085

Note: Dependent variable is stock returns adjusted for capital actions and dividends between the beginning of September 2008 and the end of March 2009. Heteroscedasticity consistent standard errors are in parentheses; *p<0.1, **p<0.05, ***p<0.01.

Table 6: Effect of exporters on financial dependence measures

	(1) Whole-Period	(2) Whole-Period	(3) Pre-Lehman	(4) Pre-Lehman	(5) Post-Lehman	(6) Post-Lehman
DebtSale	-0.073***	-0.070***	-0.083***	-0.087***	-0.033**	-0.031
	(0.016)	(0.020)	(0.022)	(0.029)	(0.016)	(0.022)
DebtSale*Exports	0.001*	0.0012	1.47E-04	-1.11E-04	0.002	0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Exports	-0.001*	-0.002*	-0.002	-0.001	-0.001	-0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Beta		-0.181***		-0.041		-0.161***
		(0.069)		(0.076)		(0.059)
Firm Size		-0.010		0.014		-0.027*
		(0.011)		(0.011)		(0.014)
Market/Book		0.008		-0.001		0.006
		(0.011)		(0.016)		(0.008)
Momentum		-0.076***		0.059		-0.118***
		(0.024)		(0.037)		(0.02)
Leverage		-0.011		-0.005		-0.005
		(0.008)		(0.010)		(0.005)
Cosntant	-0.381***	-0.154	-0.130**	-0.266*	-0.266***	0.159
	(0.035)	(0.155)	(0.056)	(0.154)	(0.024)	(0.172)
N	194	194	194	194	194	194
R-sq	0.040	0.093	0.034	0.044	0.016	0.139
adj R-sq	0.025	0.053	0.019	0.003	0.000	0.101

Note: In columns 1 and 2, dependent variables are stock returns adjusted for capital actions and dividends between the beginning of January 2008 and the end of March 2009. In columns 3 and 4, dependent variables are stock returns adjusted for capital actions and dividends between the beginning of January 2008 and the end of August 2009. In columns 5 and 6, dependent variables are stock returns adjusted for capital actions and dividends between the beginning of September 2009 and the end of March 2009. Heteroscedasticity consistent standard errors are in parentheses; *p<0.1, **p<0.05, ***p<0.01.

Table 7: Testing financial dependency variables in a period without crisis

	(1)	(2)	(3)	(4)	(5)
ExtInv	9.62E-05				-6.30E-06
	(0.000)				(0.000)
CCC		-2.78E-04			-1.10E-03
		(0.000)			(0.001)
InvSale			0.175		0.522
			(0.220)		(0.478)
DebtSale				0.095	0.069
				(0.071)	(0.084)
Constant	0.312***	0.337***	0.279***	0.263***	0.283***
	(0.041)	(0.050)	(0.054)	(0.051)	(0.056)
Observations	194	194	194	194	194
R-squared	0.000	0.002	0.003	0.020	0.031
Adjusted R-squared	-0.005	-0.003	-0.002	0.014	0.010

Note: Dependent variables are stock returns adjusted for capital actions and dividends between the beginning of January 2007 and the end of December 2007. Heteroscedasticity consistent standard errors are in parentheses; *p<0.1, **p<0.05, ***p<0.01.

Figure 1: Istanbul Stock Exchange National 100 Index

Source: Istanbul Stock Exchange.